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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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 09/120,608 07/22/98 PAGE

L EXAMINER 05

IM22/1018

E I DU PONTE DE NEMOURS AND COMPANY
LEGAL PATENTS
WILMINGTON DE 19898ART UNIT PAPER NUMBER
SHOSHO, CDATE MAILED:
1714

10/18/99

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No. 09/120,608	Applicant(s)	Page et al.
Examiner Callie Shosho	Group Art Unit 1714	

Responsive to communication(s) filed on Sep 8, 1999

This action is FINAL.

Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

Claim(s) 6-12 is/are pending in the application.

Of the above, claim(s) _____ is/are withdrawn from consideration.

Claim(s) _____ is/are allowed.

Claim(s) 6-12 is/are rejected.

Claim(s) _____ is/are objected to.

Claims _____ are subject to restriction or election requirement.

Application Papers

See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

The drawing(s) filed on _____ is/are objected to by the Examiner.

The proposed drawing correction, filed on _____ is approved disapproved.

The specification is objected to by the Examiner.

The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

All Some* None of the CERTIFIED copies of the priority documents have been

received.

received in Application No. (Series Code/Serial Number) _____.

received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

Notice of References Cited, PTO-892

Information Disclosure Statement(s), PTO-1449, Paper No(s). _____

Interview Summary, PTO-413

Notice of Draftsperson's Patent Drawing Review, PTO-948

Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

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DETAILED ACTION

1. All outstanding rejections have been overcome by applicant's amendment filed 9/8/99.

The following office action is non-final due to the new grounds of rejection described below.

Double Patenting

2. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

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3. Claims 6-11 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-6 of copending Application No. 09/120,922. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following explanation.

Copending 09/120,922 discloses an ink jet ink composition comprising (1) an aqueous vehicle comprising water, water-miscible solvent such as glycols and glycol ether wherein the water comprises no more than 80% by weight of the vehicle, (2) insoluble colorant which is a pigment, (3) polymeric dispersant, (4) surfactant selected from the group consisting of silicon surfactants and fluorinated surfactants and (5) graft copolymer binder having a hydrophobic backbone and non-ionic hydrophilic side chains. The copolymer backbone is comprised of monomers as disclosed in copending claim 3. The side chains have number average molecular weight of 1,000-2,000, are soluble in water and insoluble in polar organic solvents, and comprise macromonomers made from non-ionic monomers as disclosed in copending claim 4.

Specifically, the differences between the present application and the copending application are:

(a) present claims 6-11 are drawn to an aqueous coating composition, while the copending claims are drawn to an ink jet ink. However, one of ordinary skill in the art would have recognized that an ink jet ink is but one type of an aqueous coating composition, and it therefore would have been obvious to one of ordinary skill in the art to utilize an ink jet ink as a specific type of aqueous coating, and thereby arrive at the present claimed invention. Further

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evidence to support this position is found in the present specification on page 2, lines 32-35 where it is disclosed that the ink is suitable for ink jet printing.

(b) The present claims disclose that the side chains comprise 15-60% by weight of the graft copolymer, while the copending claims are silent with respect to the amount of side chains in the graft copolymer.

Applicants' attention is drawn to MPEP 804 where it is disclosed that "the specification can always be used as a dictionary to learn the meaning of a term in a patent claim. *In re Boylan*, 392 F.2d 1017, 157 USPQ 370 (CCPA 1968). Further, those portions of the specification which provide support for the patent claims may also be examined and considered when addressing the issue of whether a claim in an application defines an obvious variation of an invention claimed in the patent. (underlining added by examiner for emphasis) *In re Vogel*, 422 F.2d 438,164 USPQ 619,622 (CCPA 1970).

Consistent with the above underlined portion of the MPEP citation, attention is drawn to page 9, line 19 of the copending application where it is disclosed that side chains comprise 15-60% by weight of the graft copolymer. Further, one of ordinary skill in the art would have recognized that the amount of side chain present in the graft copolymer would effect the properties of the copolymer, and thereby choose amounts, including those presently claimed, in order to produce a graft copolymer with the desired properties. Thus, one of ordinary skill in the art would have arrived at the present invention from the copending one in an obvious manner without undue experimentation.

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(c) The present claims require a film-forming binder, while there is no explicit disclosure in the copending claims that the binder is film-forming. However, given that the both the presently claimed graft copolymer and the copending graft copolymer have hydrophobic backbones and non-ionic hydrophilic side chains which are soluble in the aqueous vehicle but insoluble in water, and given that the reference and copending graft copolymers contain identical monomers, it is natural to infer that the copending graft copolymer is intrinsically film-forming, and thus, one of ordinary skill in the art would have arrived at the present invention from the copending one without undue experimentation.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

4. Claims 6-11 are directed to an invention not patentably distinct from claims 1-6 of commonly assigned 09/120,922. Specifically, although the conflicting claims are not identical, they are not patentably distinct from each other because of the explanation given in paragraph 3.

5. Commonly assigned 09/120,922, discussed above, would form the basis for a rejection of the noted claims under 35 U.S.C. 103(a) if the commonly assigned case qualifies as prior art under 35 U.S.C. 102(f) or (g) and the conflicting inventions were not commonly owned at the time the invention in this application was made. In order for the examiner to resolve this issue, the assignee is required under 37 CFR 1.78(c) and 35 U.S.C. 132 to either show that the

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conflicting inventions were commonly owned at the time the invention in this application was made or to name the prior inventor of the conflicting subject matter. Failure to comply with this requirement will result in a holding of abandonment of the application.

A showing that the inventions were commonly owned at the time the invention in this application was made will preclude a rejection under 35 U.S.C. 103(a) based upon the commonly assigned case as a reference under 35 U.S.C. 102(f) or (g).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

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7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 6-7 and 9-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Held (U.S. 5,853,861) in view of Ma et al. '751 (EP 0826751) and Satake et al. (U.S. 5,814,685).

Held discloses an aqueous ink composition which is washfast and suitable for use in printing textiles (col.3, lines 35-37) which comprises (1) an aqueous carrier medium containing water and at least one water-soluble organic solvent wherein the aqueous carrier medium comprises 30-95% water, (2) colorant which is pigment, (3) binder which is a graft copolymer which contains hydrophilic and hydrophobic monomers, and (4) dispersant (col.3, lines 49-50 and 60-62, col.4, lines 5, 46-54, and 65-66). Particular attention is drawn to col.10, lines 30-40 which discloses that the ink contains dispersant and binder.

The difference between Held and the present claimed invention is the requirement in the claims of specific graft copolymer.

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While Held discloses that a graft copolymer containing hydrophilic and hydrophobic monomers is used, there is no explicit disclosure of the ionic nature of the graft copolymer, the number average molecular weight of the side chains, or the solubility of the graft copolymer.

Ma et al. '751 disclose a graft copolymer which has a hydrophobic backbone and hydrophilic side chains (page 2, lines 56-58) which are made from nonionic monomers (page 5, line 38). The hydrophobic portion binds with the insoluble colorant, while the hydrophilic portion is soluble in the aqueous carrier medium (page 4, lines 23-24). The ratio of the hydrophobic portion to the hydrophilic portion ranges from 90:10 to 10:90 (col.4, lines 23-24). By varying this ratio, the hydrophobicity/hydrophilicity balance changes which results in a graft copolymer with a varying degree of solubility in water as well as the aqueous medium.

The hydrophobic monomers include phenyl (meth)acrylate, benzyl (meth)acrylate, 2-phenylethyl (meth)acrylate, 2-phenoxyethyl (meth)acrylate, 1-naphthalyl acrylate, 2-naphthalyl (meth)acrylate, p-nitrophenyl (meth)acrylate, phthalimidomethyl (meth)acrylate, N-phenyl (meth)acrylamide, N-benzyl acrylamide, N-(2-phenylethyl)acrylamide, N-(2-phthalimidoethoxymethyl) acrylamide, vinyl benzoate, methyl (meth)acrylate, ethyl (meth)acrylate, n-butyl (meth)acrylate, 2-ethylhexyl (meth)acrylate, t-butyl methacrylate, cyclohexyl methacrylate, styrene, alpha-methyl styrene, vinyl acetate, vinyl butyrate (page 4, line 58-page 5, line 11).

The hydrophilic side chains are macromonomers (page 5, lines 54-55) which comprise 10-90%, or preferably, 20-50% of the graft copolymer (page 4, lines 24-25). The side chains are

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made from non-ionic monomers such as ethoxytriethyleneglycol methacrylate, methoxypolyethyleneglycol monomethacrylate, 2-hydroxyethyl acrylate, and 2-hydroxyethyl methacrylate (page 5, lines 45-48). Given that all the reference monomers are of the form $\text{CH}_2 = \text{C}(\text{R}_3)(\text{C}(\text{O})\text{OX}_n(\text{CH}_2 \text{CH}_2 \text{O})_m)-\text{R}_4$ (page 5, lines 40-44) where the $(\text{CH}_2 \text{CH}_2 \text{O})_m$ group represents either a polyethylene glycol or a polyethylene oxide, and absent any evidence to the contrary, it is presumed that the reference methoxypolyethyleneglycol monomethacrylate, 2-hydroxyethyl acrylate, and 2-hydroxyethyl methacrylate are identical to the claimed methoxypolyethylene oxide-methacrylate, polyethyleneoxide methacrylate, and polyethylene oxide acrylate. Ma et al. '751 do not disclose the use of N-vinyl pyrrolidone as a monomer in the side chains of the graft copolymer. However, Satake et al., which is drawn to ink jet inks, disclose a graft copolymer composed of hydrophobic and hydrophilic portions wherein the hydrophilic monomers include vinyl pyrrolidone (col.4, line 46) which imparts toughness and water resistance to the ink composition (col.3, lines 20-21).

With respect to the number average molecular weight, M_n , of the side chains, while it is disclosed that the hydrophilic side chains have a molecular weight of 1,000-50,000, or preferably 1,000-10,000 (col.6, lines 9-10), there is no explicit disclosure of M_n of the side chains in the reference. However, given that M_n is defined as $\sum N_i M_i / \sum N_i$ where N_i is the number of ^{ith individual} side chains and M_i is the molecular weight of an individual side chain, and in light of the fact that the "minimum" value of M_i is 1,000 as disclosed above, it is evident that M_n cannot be less than 1,000, and thus meets the claimed number average molecular weight requirement of at least 500.

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There is no explicit disclosure in Ma et al. '751 that the graft copolymer is film-forming. However, given that the reference graft copolymer has a hydrophobic backbone and non-ionic hydrophilic side chains and comprises monomers identical to those presently claimed, it is natural to infer that the copending graft copolymer is intrinsically film-forming.

The motivation for using this graft copolymer is that the graft copolymer disperses the colorant and thus produces a stable ink by preventing flocculation of the colorant particles (page 2, lines 44-45).

In light of the motivation for using a specific graft copolymer disclosed by Ma et al. '751 as described above, it therefore would have been obvious to one of ordinary skill in the art to use the graft copolymer in the ink composition of Held in order to produce a stable ink, and thereby arrive at the claimed invention.

9. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Held in view of Ma et al. '751 and Satake et al. as applied to claims 6-7 and 9-12 above, and further in view of Ma et al. '698 (U.S. 5,085,698), and Yamashita et al. (U.S. 5,883,157).

The difference between Held in view of Ma et al. '751 and Satake et al. is the requirement in the claims of (a) specific type of solvent and (b) specific type of surfactant.

With respect to difference (a), Held disclose that at least one solvent is used in the aqueous carrier medium and that the particular mixture depends on the requirements of the specific application such as desired surface tension, viscosity, drying time, etc. (col.3, lines 50-

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57). Ma et al.'698, which is drawn to ink jet inks, disclose the use of solvents such as pyrrolidone and glycol ethers (col.9, lines 3-10).

Thus, one of ordinary skill in the art would have recognized that the choice of solvents depends on the desired end use, and to choose particular solvents including those presently claimed, in order to produce an ink possessing optimal drying time, surface tension, and viscosity.

With respect to difference (b), Held generically disclose the use of surfactants (col.5, lines 26-27). Yamashita et al., which is drawn to ink-jet-inks, disclose the use of fluorinated surfactants and silicone surfactants (col.4, lines 13-16). It is disclosed that the motivation for using this type of surfactant is conventional in that it is used to stabilize the dispersion of colorants, enhance the penetration of the ink into the paper to improve drying, and to control wetting which will prevent feathering and bleeding of the ink.

In light of the motivation for using specific types of solvents disclosed by Ma et al. '698 and specific types of surfactants disclosed by Yamashita et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use these solvents and surfactants in the ink jet ink composition of Held in order to produce a stable ink that has improved drying and minimal feathering and bleeding and possesses optimal drying time, surface tension, and viscosity, and thereby arrive at the claimed invention.

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10. Claims 6-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ma et al. (EP 0851014) in view of Ma et al. '698 (U.S. 5,085,698).

Ma et al. '014 disclose an ink jet ink suitable for ink jet printing wherein the ink contains (1) aqueous carrier medium containing 60-95% water and water soluble organic solvent (page 2, line 52-page 3, line 4), (2) insoluble colorant such as pigment (page 3, lines 9-10 and 30-32), (3) dispersant (page 3, line 44), (4) surfactant such as Zonyl which is a fluorinated surfactant (page 5, line 48 and page 20, line 21), and (5) graft copolymer (page 5, lines 17 and 31-32). It is further disclosed that the ink is suitable for printing on fabric, i.e. textiles (page 6, line 20).

The graft copolymer contains a backbone containing hydrophobic monomers such as methyl (meth)acrylate, ethyl (meth)acrylate, propyl (meth)acrylate, n-butyl (meth)acrylate, phenyl (meth)acrylate, hexyl (meth)acrylate, 2-ethylhexyl (meth)acrylate, benzyl (meth)acrylate, phenylethyl (meth)acrylate, and hydroxyethyl (meth)acrylate (page 4, lines 11-20). The hydrophilic side chains are formed by copolymerizing monomers such as 2-(2-methoxyethoxy)ethyl (meth)acrylate, ethoxytriethyleneglycol methacrylate, methoxy polyethyleneglycol methacrylate, and polyethyleneglycol methacrylate (page 4, lines 36-40). The amount of the functional hydrophilic groups is adjusted to control the solubility of the copolymer (page 4, lines 28-29).

With respect to the number average molecular weight, M_n , of the side chains, while it is disclosed that the hydrophilic side chains have a molecular weight of 200-1000 (page 4, lines 39-40), there is no explicit disclosure of M_n of the side chains in the reference. However, given that

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M_n is defined as $\sum N_i M_i / \sum N_i$ where N is the number of side chains and M is the molecular weight of an individual side chain, and in light of the fact that the "maximum" value of M is 1,000 as disclosed above, it is evident that M_n will be at least 1,000, and thus meets the claimed number average molecular weight requirement of 1,000-2,000.

Although there is no explicit disclosure that the graft copolymer is a film-forming binder, it is natural to infer that since the reference graft copolymer has a hydrophobic backbone and non-ionic hydrophilic side chains and comprises monomers identical to those presently claimed, that the reference graft copolymer will intrinsically function as a film-forming binder.

The difference between Ma et al. '014 and the present claimed invention is the requirement in the claims of (a) specific types of solvents and (b) an ink which is washfast.

With respect to difference (a), Ma et al. '014 disclose that at least one solvent is used in the aqueous carrier medium and that the particular mixture depends on the requirements of the specific application such as desired surface tension, viscosity, drying time, etc. (page 2, lines 52-54). Ma et al.'698, which is drawn to ink jet inks, disclose the use of solvents such as pyrrolidone and glycol ethers (col.9, lines 3-10).

Thus, one of ordinary skill in the art would have recognized that the choice of solvents depends on the desired end use, and to choose particular solvents including those presently claimed, in order to produce an ink possessing optimal drying time, surface tension, and viscosity, and thereby arrive at the claimed invention.

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With respect to difference (b), there is no explicit disclosure in Ma et al. '014 that the ink is washfast. However, given that the Ma et al. '014's ink contains ingredients identical to those presently claimed, i.e. vehicle, dispersant, pigment, surfactant, and graft copolymer, it is natural to infer that the ink is intrinsically washfast.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Callie Shosho whose telephone number is (703) 305-0208. The examiner can normally be reached on Monday-Thursday from 7:00 am to 4:30 pm. The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan, can be reached on (703) 306-2777. The fax phone number for the organization where this application or proceeding is assigned is (703) 305-3599.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

C.S.

Callie Shosho
10/15/99

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